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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/550,477	04/14/2000	Christopher John Nelson	AUS000008US1	9298

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EXAMINER	
MARCELO, MELVIN C	

ART UNIT	PAPER NUMBER
2663	4

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/550,477	NELSON, CHRISTOPHER JOHN	
	Examiner	Art Unit	
	Melvin Marcelo	2663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 April 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 April 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 6 and 8-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6, lines 3-4, "said protocol interface macro" lacks a proper antecedent basis.

Claim 8, lines 2-3, "said plurality of devices" lack a proper antecedent basis.

Claim 15, lines 4-5, "said vibration signal table" lacks a proper antecedent basis.

Claim 16, lines 3-4, "said protocol interface macro" lacks a proper antecedent basis.

Claim 16, line 4, "said vibration signal table" lacks a proper antecedent basis.

Claim 18, line 14, "said host device" lacks a proper antecedent basis.

Claim 19, line 5, "said device-specific logic module" lacks a proper antecedent basis.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Gerasimov et al. publication "Things That Talk".

The Gerasimov publication "Things That Talk" corresponds to a Master's thesis in the MIT program in Media Arts and Sciences retrieved at http: //vadim.www.media.mit.edu/ttt_paper/ttt.html dated 1996 in Vadim Gerasimov's bio. The vibration wave messages corresponds to the sound wave messages generated in Gerasimov's invention. Within the Master's thesis, the most relevant area is contained in the section 'Research Results', subsection 'Phase-shift-keying and amplitude modulation'.

With respect to the claims below, references to Gerasimov appears in parenthesis.

1. A method within an electronic device for communicating within a network of localized electronic devices **(Gerasimov, uses of the invention include wireless network, see section 'Future work', first paragraph)**, *wherein said method comprises the steps of: processing incoming and outgoing vibration wave messages in accordance with a network protocol* **(See section 'Research Results', subsection 'Phase-shift-keying and amplitude modulation', wherein vibration wave messages corresponds to the sound wave messages)**; *and*
decoding a message-specific semantic of an incoming vibration wave message and encoding a message-specific semantic of an outgoing vibration wave message **(Decoding and encoding functions are described in the section between 'Equation 7' and 'Equation 8')**, *such that said device may correspond in accordance with device specific and message specific limitations* **(See abstract on**

first page for description of specific devices such as phones; the message specific limitations include synchronization such as the hail signal).

2. The method of claim 1, wherein said processing step further comprises the steps of:

decoding said incoming vibration wave message; and

encoding said outgoing vibration wave message in accordance with said network protocol **(Decoding and encoding functions are described in the section between 'Equation 7' and 'Equation 8').**

3. The method of claim 1, further comprising the step of receiving and translating said incoming vibration wave message into a digitized electronic signal **(See Figure 3, the receiver includes a transducer to receive sound and a Sound Driver to translate the signal into digitized sound).**

4. The method of claim 3, wherein all network messages include a control message **(The control message is the hail frame that is included at the beginning of each data packet, see description just below Figure 3),** *and wherein said method further comprises the steps of:*

reading said digitized electronic signal to identify said control message **(The hail frame has to be readily identifiable);**

terminating said digitized electronic signal in response to failing to identify said control message **(It is inherent to terminate the receiving process if a hail message is not identified as the beginning of each data packet);** *and*

processing said digitized electronic signal in response to identifying said control message **(The hail message must be identified before processing the data packet since it designates the beginning of each data packet).**

5. The method of claim 2, wherein said encoding step is followed by the step of generating and transmitting an outgoing vibration wave message in accordance with said network protocol **(See Figure 3, the transmitter includes a Special or FSK Modulator and Sound Driver for generating and transmitting an outgoing vibration wave message following the encoding step in the Packet/ECC Protocol Module).**

6. The method of claim 5, wherein said generating and transmitting step further comprises the steps of: translating a digital signal from said protocol interface macro into an analog signal **(See Figure 3, the transmitter includes the Modulator for translating the digital signal from the Protocol module into the analog signal Sound Data)**; *and converting said translated analog signal into an outgoing vibration wave message* **(The transmitter further includes the Sound Driver and speaker for converting the translated analog signal into an outgoing vibration wave message).**

7. The method of claim 1, wherein said device **(Devices include those listed in the Abstract)** *includes a base media interface having an vibration signal table which stores a plurality of predetermined vibration wave signals* **(The base media interface is the Sonicom-data transfer scheme in Figure 3 that stores the table corresponding to Figure 1 associating the hail signal and 16 different coding frames to predetermined vibration wave signals)**, *and wherein method further comprises encoding said outgoing vibration wave message utilizing at least one of said plurality of predetermined vibration wave signals within said vibration signal table* **(The encoded packet includes the predetermined vibration wave signals within the signal table shown in Figure 1).**

8. An electronic device comprising:
a base media interface **(Sonicom-data transfer scheme in Figure 3)** *within each of said plurality of devices* **(Devices include those listed in the Abstract)** *for processing incoming and outgoing vibration wave messages in accordance with a network protocol; and*
a device-specific logic **(Devices such as the computers in the "Battleship" demonstration, which have device-specific logic associated with the Input and Output messages in the Sonicom transmitter and receiver in Figure 3, use sound/vibration wave messages in order to negotiate moves during the game, see description below 'Equation 8')** *in communication with said base media interface for decoding a message-specific semantic of an incoming vibration wave message and encoding a message-specific semantic of an outgoing vibration wave message, such that each of said plurality of devices may correspond in accordance with device specific* **(Computer specific instructions)** *and message specific* **(Synchronization messages such as the hail signal)** *limitations.*
9. The communication interface of claim 8, wherein said base media interface comprises a protocol interface macro for decoding said incoming vibration wave message **(Packet Decoder with Error Correction)** *and encoding said outgoing vibration wave message* **(Packet/ECC Protocol Module)** *in accordance with said network protocol.*
10. The communication interface of claim 9, wherein said base media interface further comprises a transducer **(Figure 3, receiver includes a transducer connected to the Sound Driver)** *for receiving and translating said incoming vibration wave message into an electronic signal.*

11. The communication interface of claim 10, wherein said base media interface further comprises an analog-to-digital converter for digitizing said electronic signal **(Figure 3, receiver includes the Sound Driver for converting the signal into Digitized Sound).**

12. The communication interface of claim 9, wherein said base media interface further comprises a vibration encoder **(Figure 3, transmitter includes the Special or FSK Modulator, Sound Driver and Speaker)** *in communication with said protocol interface macro* **(Packet/ECC Protocol Module)** *for generating and transmitting an outgoing vibration wave message in accordance with said network protocol.*

13. The communication interface of claim 12, wherein said vibration encoder comprises:

a digital-to-analog converter **(Figure 3, Special or FSK Modulator)** *for converting a vibration-encoded digital signal from said protocol interface macro* **(Packet/ECC Protocol Module)** *into an vibration-encoded analog signal* **(Sound Data)**; *and*

a speaker for translating said vibration-encoded analog signal into an outgoing vibration wave message **(Speaker at the end of the transmitter).**

14. The communication interface of claim 8, wherein said base media interface includes a message table which stores a plurality of predetermined vibration wave signals **(The base media interface is the element in Gerasimov that includes the Sonicom transmitter program and stores the table corresponding to Figure 1 associating the hail signal and 16 different coding frames to predetermined vibration wave signals).**

15. The communication interface of claim 14, wherein said device-specific logic encodes said outgoing vibration wave

message utilizing at least one of said plurality of predetermined vibration wave signals within said vibration signal table **(The encoded packet includes the predetermined vibration wave signals within the signal table shown in Figure 1).**

16. The communication interface of claim 14, wherein said base media interface further comprises computer processing means **(It is inherent that the "Battleship" PCs (personal computers) include processors that control the interactive processing among devices within the PC)** *that provides interactive processing among said protocol interface macro* **(Packet/ECC Protocol Module in Figure 3)**, *said vibration signal table* **(Figure 1)**, *and said device-specific logic* **(Logic in the "Battleship" computers).**

17. The communication interface of claim 16, further comprising a non-vibration feedback source **(It is inherent that the "Battleship" PCs include keyboards that are non-vibration feedback sources)** *in communication with said computer processing means* **(Processor in the PCs)** *for providing external non-vibration feedback control* **(User on keyboard of PC)** *of said outgoing vibration wave message.*

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toh (US 5,987,011 A) in view of Gerasimov et al.

Toh teaches a radio frequency computer network (Figure 5A), wherein a mobile host (computer) processes and relays packets, but checks seen tables in order to determine whether the packet has been previously received in order to prevent transmitting the same packet (column 16, line 16 to column 17, line 4). Toh does not teach the vibration signal transmission method. However, Gerasimov explicitly teaches that their vibration signal transmission method is an alternative to radio frequency methods (See section 'Sound in device-to-device communication'). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the radio frequency method in Toh with the vibration signal method as explicitly suggested by Gerasimov.

With respect to the claims below, references to the prior art appear in parenthesis.

18. A method for processing a communication message with another device, said method comprising the steps of:
transducing an incoming vibration signal into an incoming electronic signal **(Gerasimov, Figure 3, Sonicom receiver includes a transducer);**
decoding said incoming electronic signal to determine whether said incoming vibration signal is a network message **(Gerasimov, the Sonicom decodes the incoming electronic signal to determine whether the hail frame has been received, the hail frame designates the beginning of each data packet);**
responsive to a determination that said incoming vibration signal is not a network message, terminating said incoming electronic signal **(Gerasimov, it is inherent to terminate the incoming electronic signal when it does not begin with the hail frame);**

responsive to a determination that said incoming vibration signal is an incoming network message **(Gerasimov, the hail frame designates the beginning of the data packet)**, *determining whether said incoming network message has been previously received by said host device* **(Toh, the radio frequency host device checks seen tables to determine whether packets have been previously received, column 16, lines 16-54)**;

responsive to a determination that said incoming vibration signal has been previously received by said host device, terminating said incoming network message **(Toh, previously received packets are discarded, column 16 lines 54-58)**; *and*

responsive to a determination that said incoming vibration signal has not been previously received by said host device, transmitting said incoming network message as an outgoing vibration message **(Toh, packets not previously received are relayed, column 16, lines 16-54)**.

19. The method of claim 18, further comprising the steps of decoding a semantic of said incoming network message into a device-specific command in accordance with a device-specific decoder and device-specific instructions stored within said device-specific logic module **(The device-specific command/decoder/instruction/logic module corresponds to the mobile host/computer wherein the Sonicom-data transfer scheme is independent of the command/decoder/instruction/logic module associated with the host/computer. For example, the "Battleship" demonstration commands are independent of the functions of the Sonicom in Gerasimov)**.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bender et al. ('Techniques for data hiding') teach a prior art sound transmission system (Figure 11 (D) "Over The Air"). These later filed publications teach sound transmission system: Gerasimov et al. ('Things that talk: Using sound for device-to-device and device-to-human communication'); Lopes et al. ('Aerial Acoustic Communications' and 'Acoustic Modems for Ubiquitous Computing'); and Domingues et al. ('Aerial Communications using Piano, Clarinet, and Bells').

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin Marcelo whose telephone number is 703-305-4373. The examiner can normally be reached on Monday-Friday, 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on 703-308-5340. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Melvin Marcelo
Primary Examiner
Art Unit 2663

June 12, 2004